Claims

1.

A blow molded plastic hot-fill container that includes at least one vacuum panel for inward flexure under vacuum, wherein said vacuum panel is externally concave as viewed in cross section from a first direction and externally convex as viewed in cross section from a second direction orthogonal to said first direction.

2.

The container set forth in claim 1 wherein said container has a sidewall extending from a base to a neck finish, and wherein said at least one vacuum panel is disposed in said sidewall.

3.

The container set forth in claim 2 including a base for supporting the container, a body extending from said base, a dome extending from said body and a neck finish extending from said dome, wherein said at least one vacuum panel is disposed in said dome.

4.

The container set forth in claim 2 wherein said sidewall, including said at least one vacuum panel, is of generally uniform wall thickness.

5.

The container set forth in claim 4 wherein said at least one vacuum panel includes an array of vacuum panels at uniform spacing around an axis of said container.

6.

The container set forth in claim 5 wherein said vacuum panels are separated from each other by circumferentially spaced ribs.

7.

The container set forth in claim 6 wherein said ribs have external surfaces on a common surface of revolution, and wherein said vacuum panels are recessed radially inwardly from said surface of revolution.

8.

A blow-molded plastic hot-fill container that includes:

a base for supporting the container, a body extending from said base, a dome extending from said body and a neck finish extending from said dome,

wherein said dome includes an array of vacuum panels, each of said vacuum panels being externally concave as viewed in cross section from a first direction and externally convex as viewed in cross section from a second direction orthogonal to said first direction.

9.

The container set forth in claim 8 wherein said vacuum panels are externally concave in cross section as viewed tangentially of said dome and externally convex in cross section as viewed axially of said dome.

10.

The container set forth in claim 8 wherein said dome, including said array of vacuum panels, is of generally uniform wall thickness.

11.

The container set forth in claim 8 wherein said vacuum panels are separated from each other by circumferentially spaced ribs in said dome.

12.

The container set forth in claim 11 wherein said ribs are connected to annular rings that encircle said dome above and below said vacuum panels, wherein said ribs have external surfaces on a common surface of revolution, and wherein said vacuum panels are recessed radially inwardly from said surface of revolution.

13.

A blow-molded plastic hot-fill container that includes:

a base for supporting the container, a body extending from said base, a dome extending from said body and a neck finish extending from said dome,

wherein said dome includes an array of flexible resilient vacuum panels separated from each other by circumferentially spaced ribs,

wherein each of said vacuum panels is externally concave as viewed in cross section from a first direction and externally convex is viewed in cross section from a second direction orthogonal to said first direction, and

wherein said dome, including said array of vacuum panels, is of generally uniform wall thickness and circular in cross section.

14.

The container set forth in claim 13 wherein said vacuum panels are externally concave in cross section as viewed tangentially of said dome and externally convex in cross section as viewed axially of said dome.

15.

The container set forth in claim 13 wherein said ribs are connected to annular rings that encircle said dome above and below said vacuum panels, wherein said ribs have external surfaces on a common surface of revolution, and wherein said vacuum panels are recessed radially inwardly from said surface of revolution.

16.

A method of making a hot-fill plastic container that includes the step of blow molding a container having at least one vacuum panel for inward flexure under vacuum, wherein said vacuum panel is externally concave as viewed in cross section from a first direction and externally convex as viewed in cross section from a second direction orthogonal to said first direction.

17.

A container made in accordance with the method set forth in claim 16.

18.

A method of making a hot-fill plastic container that includes the step of blow molding a container having a base for supporting the container, a body extending from said base, a dome extending from said body and a neck finish extending from said dome, wherein said dome includes an array of vacuum panels, each of said vacuum panels being externally concave as viewed

in cross section from a first direction and externally convex as viewed in cross section from a second direction orthogonal to said first direction.

19.

The method set forth in claim 18 wherein said container is blow molded from a preform.

20.

The method set forth in claim 19 wherein said vacuum panels are externally concave in cross section as viewed tangentially of said dome and externally convex in cross section as viewed axially of said dome.

21.

The method set forth in claim 19 wherein said dome, including said array of vacuum panels, is of generally uniform wall thickness.

22.

The method set forth in claim 18 wherein said vacuum panels are separated from each other by circumferentially spaced ribs in said dome.

23.

The method set forth in claim 22 wherein said ribs are connected to annular rings that encircle said dome above and below said vacuum panels, wherein said ribs have external surfaces on a common surface of revolution, and wherein said vacuum panels are recessed radially inwardly from said surface of revolution.

24.

A molded plastic container made in accordance with the method set forth in claim 19.

25.

A molded plastic container made in accordance with the method set forth in claim 18.